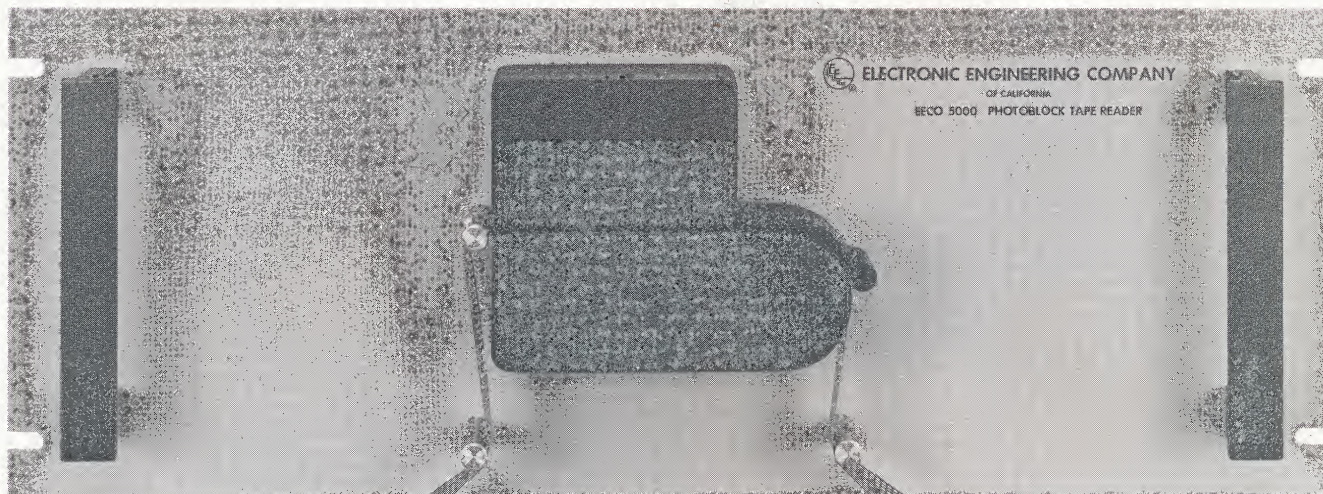




DATA
SHEET

EECO 5000 Series PHOTOBLOCK READERS

40 TO 160 BITS PER FRAME



EECO 5000 PHOTOBLOCK Reader

- High reliability of photoelectric readout at a price comparable to mechanical readers.
- Silicon switching transistor outputs—100 milliamp rating.
- All solid state drive — no clutches, no ratchets, no solenoids.
- Standard 8-level punched tape—virtually infinite tape life.
- 40 to 160 bits per block—up to 12 blocks per second.

The EECO 5000 Series PHOTOBLOCK Readers combine the inherent high reliability of solid state photoelectric readout with the higher current switching capacity and the low cost of mechanical contact block readers.

EECO 5000 Series units are available in 5 standard block configurations ranging in size from 40 to 160 parallel output bits. Each output bit will switch up to 100 milliamperes at voltages to +40 volts. Other output options are available. Maximum stepping rate is from 5 to 12 blocks per second depending on the number of bits per block.

Block readers are used in automatic punched tape programmed systems such as test equipment, machine tool control, manufacturing process control, and many other similar applications where a large amount of information is needed simultaneously for programming and control. Using a block reader, up to 20 eight-bit characters can be read in parallel from standard one-inch-wide tape, eliminating the need for buffer storage or memory. This simplifies system design, reduces costs, and increases over-all reliability.

EECO 5000 Series PHOTOBLOCK READERS

The 5000 Series PHOTOBLOCK Readers can be supplied to move the tape forward only or in both forward and reverse directions.

The tape drive motor is transistor controlled. The motor electro-dynamically positions the tape for reading. There are no ratchets, solenoids or relays, except for the relay used to reverse the motor in the bidirectional models.

The tape is advanced from block to block on the receipt of external pulse commands.

There are two modes of tape drive — STEP and SLEW. In the STEP mode, an external pulse triggers

the drive circuit, which moves the tape one frame. In the SLEW mode, the tape runs at full speed without readout.

The tape is read by detecting the presence or absence of light through the tape holes using silicon light-sensitive photodiodes — one for each bit.

The output of each diode is followed with a silicon transistor amplifier terminating in a silicon switching transistor having a current rating of 100 ma.

Outputs are gated off during tape advance. Tape can remain in the read position indefinitely with full current flowing through the output switching transistors.

SPECIFICATIONS

| Model Numbers* | Block Size | Nominal Advance Time (ms/Block) | Step Rate (Blocks/sec.) |
|----------------|-------------------|---------------------------------|-------------------------|
| EECO 5105 | 5 line, 40 bits | 85 | 0-12 |
| EECO 5110 | 10 line, 80 bits | 125 | 0- 8 |
| EECO 5112 | 12 line, 96 bits | 125 | 0- 8 |
| EECO 5115 | 15 line, 120 bits | 165 | 0- 6 |
| EECO 5120 | 20 line, 160 bits | 200 | 0- 5 |

*—Add a "B" to the model number for bidirectional operation.

OUTPUTS

Outputs suitable for operating relays or solenoids, switching resistive loads, or providing logic levels for controlling electronic circuits can be provided.

Output amplifiers are on plug-in circuit cards — eight amplifiers on one card. Changing the output circuit merely requires inserting a different circuit card.

All of the transistors in the amplifiers are silicon.

OUTPUT CIRCUITS OPTIONS**

| | "Hole" Condition | "No Hole" Condition | Circuit |
|--|---|---|---------|
| Logic Level Output for Resistive Loads* Standard output Option "A" output | $+0.2 \pm 0.2$ vdc $+25$ v ± 1 vdc (no load) | $+25$ v ± 1 vdc (no load) $+0.2 \pm 0.2$ vdc | |
| Transistor Switch Output for Relays or Solenoids Option "B" output for relays or solenoids | On | Off | |
| Logic Level Output for Resistive Loads* Option "C" output Option "D" output | -0.2 ± 0.2 vdc -25 v ± 1 vdc (no load) | -25 v ± 1 vdc (no load) -0.2 ± 0.2 vdc | |
| Transistor Switch Output for Relays or Solenoids Option "E" output for relays or solenoids | On | Off | |

*Maximum external load to ground is 1000 ohms.

**Specify option when ordering.

All outputs are gated off to "no hole" condition during tape advance between frames. This gating is controlled automatically by reader drive electronics.

Other output configurations available include different voltage levels and higher drive currents.

OPERATING MODES

Step Input:

An external switch closure selects STEP mode. This may be permanently jumpered externally if a SLEW mode (see below) is not required.

Models with Positive Output Levels (Standard Output, Options A or B) require the following step input signal:

Type Positive-going pulse, dc level change or mechanical or transistor switch closure to internal +25 vdc.
Amplitude 20 \pm 10 vdc.
Rise Time 10 μ seconds maximum.
Pulse Duration 20 μ seconds minimum.
Input Impedance .. 1000 ohms in series with 0.0047 mfd shunted by 100,000 ohms to ground.

Models with Negative Output Levels (Output Options C, D or E) require the following step input signal:

Type Pulse output, level change output; or transistor or mechanical switch closure to ground.
Rise Time 10 μ seconds maximum.
Amplitude 20 \pm 10 vdc positive-going pulse or dc level change from a -25 vdc level.
Pulse Duration 20 μ seconds minimum.
Input Impedance .. 1000 ohms in series with 0.0047 mfd shunted by 100,000 ohms to -25 vdc.

Slew

For tape positioning or rewind. External switch "open" selects SLEW mode. A "step advance" pulse starts the tape motion which continues until the external switch is closed. There is no readout in the SLEW mode. The tape speed is the same as in the STEP mode.

FRAME TRANSFER SIGNAL

An output signal indicates the tape is advancing between frames and that all outputs are gated to the "no hole" condition.

In models with Positive Output Levels (Standard Outputs, Options A or B), the frame transfer signal has the following characteristics:

Frame Transferring .. +0.2 \pm 0.2 vdc. Maximum loading is 100 milliamps from a positive maximum external voltage of +40 vdc.

Frame Not Transferring 25 \pm 1 vdc with a source impedance of 1000 ohms. Maximum external load to ground is 100 ohms.

In models with Negative Output Levels (Output Options C, D, or E), the frame transfer signal has the following characteristics:

Frame Transferring .. -0.2 \pm 0.2 vdc. Maximum loading is 100 milliamperes from a maximum external voltage of -25 vdc.

Frame Not

Transferring -25 \pm 1 vdc with a source impedance of 1000 ohms. Maximum external load to ground is 100 ohms.

FORWARD/REVERSE

Normal operation is for the tape to run from left to right; however, models can be furnished which will operate in both directions. Closure of an external switch reverses the tape motion (right to left) for both STEP and SLEW modes.

LIGHT SOURCE

The light source is a single, vibration-proof lamp designed for aircraft applications. Life expectancy is about 1000 hours. The lamp has a single contact, bayonet base for easy replacement.

TAPE

Standard 1-inch wide, 8-level paper-mylar or metalized-mylar tape having opacity of 95% or greater should be used. Thicknesses of 0.0030 to 0.0045 are recommended. Code hole spacing on 0.1-inch centers. (EIA Standard RS-227).

TAPE DRIVE

A transistor-controlled dc step motor drives the tape. There are no mechanical clutches, brakes, or solenoids. Tape is positioned by a sprocket wheel. Reading diodes are protected by a glass plate. Tape is not clamped, and is in contact only with smooth glass or polished metal.

ELECTRICAL INTERFERENCE

Diode output is high level, which eliminates false reading in the presence of high levels of RFI or from transients on the power line. As there are no contacts or relays in the EECO 5000 (except a reversing relay), there is virtually no RFI radiated.

MAINTENANCE

No lubrication is required. The only regular maintenance needed is to replace the tape illuminating lamp at about 1000-hour intervals and to occasionally dust the read head. Life of the drive belt is in excess of 10,000 hours.

POWER

105/125 vac 50-400 cps 200 watts

PHYSICAL

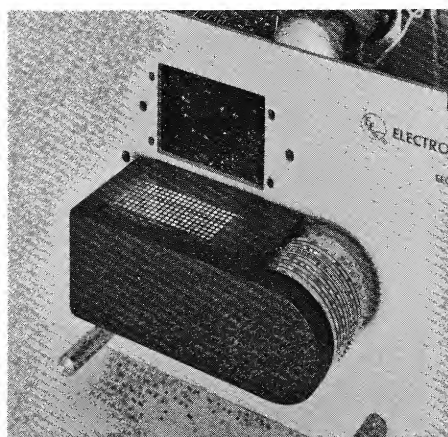
7" high—19" wide—13" deep, behind front panel including the connectors. Weight: 30 lbs. approx.

ENVIRONMENT

10°C to +40°C (50°F to 104°F).

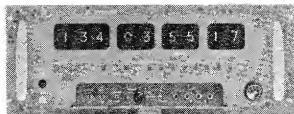
CONNECTORS

All inputs and outputs are made with Cannon "D Series" connectors on the rear panel. All mating connectors are supplied.



Photoblock read head,
with cover and lens removed,
shows photo diodes arranged in
8 level x 20 line configuration.

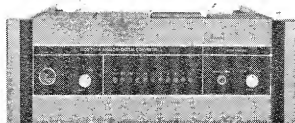
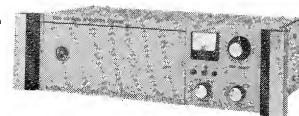
OTHER **EECO** PRODUCTS



..... TIME CODE GENERATORS

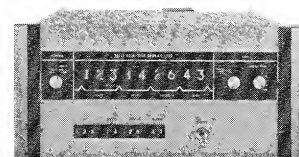
AUXILIARY TIMING EQUIPMENT

Line Drivers, Count Down Clocks, Distribution Amplifiers, Remote Time Displays, Terminal Timing Units.

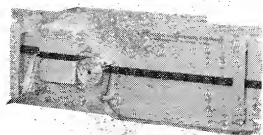


..... DATA HANDLING EQUIPMENT

Format Control Buffers, A-D Converters, Magnetic Core Memories, Complete Data Acquisition Systems.



TAPE SEARCH AND CONTROL SYSTEMS



..... PHOTOELECTRIC PUNCHED TAPE BLOCK READERS

VLF RECEIVERS



Electronic Engineering Company
of California



HOME OFFICE:
1601 E. Chestnut Avenue, P.O. Box 58
Santa Ana, California 92702
Phone: (714) 547-5501

WASHINGTON D.C. OFFICE:
Room 403, 1801 No. Moore Street
Arlington, Virginia 22209
Phone: (703) 525-2700



ANOTHER **Datamation** READER INQUIRY

A T NELSON
SYSTEM CONSULTANT
BOX 1546
POUGHKEEPSIE
NEW YORK 12603

PROD

THIRD CLASS